UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,424	09/08/2000	Changming Liu	0023-0200	2970

44987 7590 10/13/2010

HARRITY & HARRITY, LLP
11350 Random Hills Road
SUITE 600
FAIRFAX, VA 22030

EXAMINER	
ENGLAND, DAVID E	

ART UNIT	PAPER NUMBER
2443	

MAIL DATE	DELIVERY MODE
10/13/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHANGMING LIU and YAN KE

Appeal 2009-006471
Application 09/658,424
Technology Center 2400

Before JOHN A. JEFFERY, JOSEPH L. DIXON, and JAY P. LUCAS, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-22. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

---

[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

Appellants invented tools for guaranteed bandwidth sharing in a traffic shaping system that transfers bandwidth from a shared bandwidth "bucket" when appropriate. *See generally* Spec. 3-4. Claim 1 is illustrative:

1. A method for allocating bandwidth in a network appliance where the network appliance includes a plurality of guaranteed bandwidth buckets used to evaluate when to pass traffic through the network appliance, the method comprising:

providing a shared bandwidth bucket associated with each of the plurality of the guaranteed bandwidth buckets;

allocating bandwidth to the shared bandwidth bucket based on the underutilization of bandwidth in any one of the plurality of guaranteed bandwidth buckets;

determining whether bandwidth in one of the plurality of guaranteed bandwidth buckets is sufficient to allow traffic to pass immediately through the network appliance; and

transferring bandwidth from the shared bandwidth bucket to one of the plurality of guaranteed bandwidth buckets when it is determined that bandwidth in one of the plurality of guaranteed bandwidth buckets is not sufficient to allow traffic to pass immediately through the network appliance.

The Examiner relies on the following as evidence of unpatentability:

Iverson	US 6,052,379	Apr. 18, 2000
Chirvolu	US 6,839,321 B1	Jan. 4, 2005 (filed July 18, 2000)
Ho	US 6,862,270 B1	Mar. 1, 2005 (filed July 14, 2000)

Appellants' admitted prior art on Page 2 of the specification ("APA").

THE REJECTIONS[2]

1. The Examiner rejected claims 1, 5, 6, and 14 under 35 U.S.C. § 103(a) as unpatentable over Iverson. Ans. 3-4.[3]
2. The Examiner rejected claims 2, 3, 7-11, 13, and 15-22 under 35 U.S.C. § 103(a) as unpatentable over Iverson and Ho. Ans. 5-10.
3. The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as unpatentable over Iverson and APA. Ans. 11.
4. The Examiner rejected claim 12 under 35 U.S.C. § 103(a) as unpatentable over Iverson, Ho, and Chirvolu. Ans. 11.

THE OBVIOUSNESS REJECTION OVER IVERSON

Regarding representative claim 1, the Examiner finds that Iverson discloses a bandwidth allocation method utilizing "shared" and "guaranteed" bandwidth buckets which the Examiner equates to Iverson's first and second buckets 402, 404 in Figure 10. The Examiner acknowledges that Iverson does not disclose plural guaranteed bandwidth buckets as claimed, but nevertheless contends that providing multiple guaranteed bandwidth buckets in lieu of one such bucket would have been obvious. Ans. 3-4, 12-13.

Appellants argue that even if Iverson's two buckets could be considered shared and guaranteed bandwidth buckets, respectively, this association is a one-to-one relationship. Therefore, Appellants contend that

[2] Although the Examiner refers to a withdrawn rejection under § 102 (Ans. 12), only the Examiner's obviousness rejections are on appeal. *See* App. Br. 6-7 (noting that only obviousness rejections are appealed). *Accord* Ans. 2 (confirming this status as correct).

[3] Throughout this opinion, we refer to (1) the Appeal Brief filed May 7, 2008; (2) the Examiner's Answer mailed July 21, 2008; and (3) the Reply Brief filed September 22, 2008.

Iverson does not teach or suggest associating a shared bandwidth bucket with each of multiple guaranteed bandwidth buckets as claimed. Appellants make similar arguments regarding claim 14, but add that the Examiner did not indicate how Iverson teaches (1) the recited first and second policies using first and second buckets to allocate guaranteed bandwidth, and (2) borrowing bandwidth from the shared bandwidth bucket to allow traffic to pass immediately through the network appliance. App. Br. 14-17. The issues before us, then, are as follows:

ISSUES

Under § 103, has the Examiner erred by finding that Iverson would have taught or suggested:

(1) associating a shared bandwidth bucket with each of multiple guaranteed bandwidth buckets as recited in claim 1? This issue turns on whether providing multiple "guaranteed bandwidth buckets" in lieu of one such bucket in Iverson would have been obvious.

(2)(a) the recited first and second policies using first and second buckets to allocate guaranteed bandwidth, and (b) borrowing bandwidth from the shared bandwidth bucket to allow traffic to pass immediately through the network appliance as recited in claim 14?

FINDINGS OF FACT (FF)

1. Iverson uses a dual "leaky bucket" priority scheme 398 to assign priorities to ports assigned to channels in a channel bank 60. A first "water level" in a first bucket 402 (the "CSum bucket") is associated with an amount of allotted bandwidth unused by the channel unit. A second "water

level" in a second bucket 404 (the "ESum bucket") is associated with an amount of unused allotted bandwidth exceeding an overflow level of the first bucket. A priority value is derived from the first water level when the first water level is above zero, and a priority value is derived from the second water level when the first water level is below or equal to zero. Iverson, Abstract; col. 17, l. 24 – col. 19, l. 53; Figs. 3, 10-11.

2. At the end of every evaluation interval, the Committed Information Rate (CIR) quantum is emptied into the CSum bucket 402 and/or the ESum bucket 404. Each bucket's current water level is therefore the result of (1) adding the CIR bit quantum for the last measurement interval, and (2) subtracting the amount of outgoing traffic 409 transmitted in the last measurement interval. Iverson, col. 17, ll. 40-50; col. 18, ll. 9-20; Fig. 10.

3. On the outgoing side, traffic (T1Out) from a particular port 62 in the last measurement interval is subtracted from either bucket 402, 404 depending on priority. If the priority is below the midpoint of the total priority range, the port has been sending data above the allocated CIR, so bandwidth is taken from the second bucket 404 as noted by arrow 406. But if the priority is above the midpoint, then bandwidth taken from the first bucket 402 as noted by arrow 408. Iverson, col. 18, ll. 31-45; Fig. 10.

ANALYSIS

Claims 1, 5, and 6

This dispute hinges on one fundamental question: Would it have been obvious to provide multiple "guaranteed bandwidth buckets" in lieu of one such bucket in Iverson?

To answer this question, we first clarify the Examiner's mapping of Iverson's buckets 402 and 404 in Figure 10, for the Examiner seemingly takes alternative positions in this regard. On the one hand, the Examiner maps (1) Iverson's *second* bucket 404 to the recited "shared bandwidth bucket," and (2) Iverson's *first* bucket 402 and the CIR to the recited "guaranteed bandwidth buckets." Ans. 12. But on the other hand, the Examiner also equates (1) Iverson's *first* bucket 402 to the recited "shared bandwidth bucket," and (2) Iverson's *second* bucket 404 to the recited "guaranteed bandwidth bucket." Ans. 17.

Appellants' arguments, however, are based on the assumption that Iverson's *second* bucket 404 corresponds to the recited "shared bandwidth bucket," and (2) Iverson's *first* bucket 402 corresponds to the recited "guaranteed bandwidth bucket." App. Br. 10; Reply Br. 5.[4]

Despite this ambiguity, we find that, when considering the respective recited functions of the shared and guaranteed bandwidth buckets, Iverson's *second* bucket 404 more reasonably corresponds to the recited "shared bandwidth bucket," and (2) Iverson's *first* bucket 402 more reasonably corresponds to the recited "guaranteed bandwidth bucket." We reach this conclusion noting, as do Appellants (App. Br. 13), that Iverson associates the second bucket with the first bucket to maintain excess bandwidth allocated to, but not used by, the first bucket (*see* FF 1)—a function commensurate with the shared bandwidth bucket in claim 1.

[4] *Accord* App. Br. 13 ("[Iverson's] second bucket 404 is associated directly with first bucket 402 to maintain excess bandwidth allocated to, but not used by, first bucket 402.").

Although this relationship between buckets in Iverson is a one-to-one association as Appellants argue (App. Br. 10; Reply Br. 5-6), we nonetheless are not persuaded of error in the Examiner's position that providing multiple guaranteed bandwidth buckets in lieu of a single such bucket would have been obvious. Appellants argue that such an enhancement involves more than merely duplicating parts since it more optimally distributes traffic resources by virtue of the recited bucket association. App. Br. 11-12; Reply Br. 5-7. But even assuming, without deciding, that this is the case, we see no reason why merely adding first buckets (i.e., "guaranteed bandwidth buckets") to Iverson's arrangement and associating them with the shared bandwidth bucket would not predictably yield commensurate benefits as those realized in Iverson's one-to-one bucket association, namely maintaining and using excess bandwidth when appropriate for particular buckets. *See* FF 1-3. Nor have Appellants provided any evidence on this record proving that such an enhancement would have been beyond the level of ordinarily skilled artisans.

It is well settled that if a technique has been used to improve one device, and skilled artisans would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). On this record, we see no reason why skilled artisans would not have recognized that applying Iverson's technique would predictably improve similar arrangements with multiple guaranteed bandwidth buckets associated with a shared bandwidth bucket. No unexpected results ensue from the multiplicity of buckets.

We are therefore not persuaded that the Examiner erred in rejecting representative claim 1, and claims 5 and 6 not separately argued.

Claim 14

For similar reasons, we likewise sustain the Examiner's rejection of independent claim 14. Claim 14 differs from claim 1 in calling for, in pertinent part, (1) defining guaranteed bandwidth allocations for first and second policies using first and second buckets, respectively, and (2) the first and second buckets borrowing bandwidth from a shared bandwidth bucket. Despite Appellants' challenging the Examiner's reliance on Iverson in light of these distinctions (App. Br. 16), we nonetheless are not persuaded of error in the Examiner's rejection.

Since Iverson's first bucket corresponds to a "guaranteed bandwidth bucket" as noted above, we see no reason why it would not be used to define a guaranteed bandwidth allocation for a first policy for passing network traffic as claimed, particularly since the system's traffic handling capabilities are dictated in accordance with particular criteria (policies). *See* FF 1-3. While Iverson is silent regarding a second such bucket, we nonetheless see no reason why an additional similar bucket could not have been provided in conjunction with the first bucket (i.e., provide multiple buckets similar to the guaranteed bandwidth buckets noted above) for the reasons indicated previously. And as we noted previously, we see no reason why skilled artisans would not have associated these buckets with a shared bandwidth bucket as claimed. Moreover, Iverson at least suggests that the first bucket "borrows" bandwidth from the shared bandwidth bucket depending on priority. *See* FF 3.

We are therefore not persuaded that the Examiner erred in rejecting claim 14.

THE OBVIOUSNESS REJECTION OVER IVERSON AND HO

Regarding independent claim 16, the Examiner finds that Iverson discloses every recited feature except for using tokens, but cites Ho to cure this deficiency. Ans. 8-9. Appellants argue that the cited prior art does not teach or suggest (1) a first bucket configured to receive tokens at a first information rate; (2) a second bucket configured to receive tokens at a second information rate; and (3) a third bucket configured to receive extra tokens from the second bucket. App. Br. 20-23; Reply Br. 8. The issue before us, then, is as follows:

ISSUE

Under § 103, has the Examiner erred in rejecting claim 16 by finding that Iverson and Ho collectively would have taught or suggested (1) a first bucket configured to receive tokens at a first information rate; (2) a second bucket configured to receive tokens at a second information rate; and (3) a third bucket configured to receive extra tokens from the second bucket?

ANALYSIS

Claims 16-22

We will also sustain the Examiner's rejection of representative claim 16. As noted previously, we see no reason why buckets corresponding to the Iverson's first bucket 402 could not be added in conjunction with that

bucket. Our previous discussion in that regard applies equally here, and therefore we find that providing first and second buckets to receive tokens at first and second information rates would have been obvious. We reach this conclusion noting that nothing in the claim requires that the first and second information rates be different.

Nor are we persuaded of error in the Examiner's position that the recited "third bucket" corresponds to the Iverson's "second bucket" 404 essentially for the reasons indicated previously. We reach this conclusion noting that Iverson associates the second bucket with the first bucket to maintain excess bandwidth allocated to, but not used by, the first bucket. *See* FF 1-3. As noted by Appellants (Reply Br. 8), bandwidth in first bucket 402 can flow into second bucket 404. *See* FF 1-3. Accordingly, this functionality at least suggests the functionality of the recited "third bucket."

We are therefore not persuaded that the Examiner erred in rejecting representative claim 16, and claims 17-22 not separately argued.

Claims 2, 3, 7-11, and 13

Since we are not persuaded of error in the Examiner's reliance on Iverson as noted above, we likewise sustain the Examiner's rejection of claims 2, 3, 7-11, and 13 not argued with particularity. *See* App. Br. 18.

Claim 15

We likewise sustain the Examiner's rejection of claim 15. Although Appellants argue that Ho does not cure Iverson's previously-noted deficiencies (App. Br. 18-20), we are not persuaded by these arguments for the reasons noted previously.

OTHER OBVIOUSNESS REJECTIONS

Although Appellants argue that the other cited prior art does not cure Iverson's previously-noted deficiencies (App. Br. 24-25) regarding the Examiner's other obviousness rejections (Ans. 11), we are not persuaded by these arguments for the reasons noted previously.

CONCLUSION

The Examiner did not err in rejecting claims 1-22 under § 103.

ORDER

The Examiner's decision rejecting claims 1-22 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

Appeal 2009-006471
Application 09/658,424

pgc

HARRITY & HARRITY, LLP
11350 Random Hills Road
SUITE 600
FAIRFAX, VA 22030